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09/519,719	03/07/2000	Hamid Noorbakhsh	4150	8956

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APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER	
ALEJANDRO MULERO, LUZ L	
ART UNIT	**PAPER NUMBER**
1763	

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.

EXAMINER

ART UNIT	PAPER
	1004

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Commissioner for Patents

See the attached Examiner's Answer.

Luz L. Alejandro
Primary Examiner
Art Unit: 1763

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/519719
Filing Date: March 7, 2000
Appellant(s): Noorbakhsh et al.

Keith Taboada
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9/24/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is substantially correct. The instant claimed invention is directed to a semiconductor processing chamber comprising: a chamber body having a wall, a bottom and a lid assembly defining a chamber volume; a substrate support disposed in the chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber

volume, the base having an inlet and outlet adapted to circulate a fluid through the passage, as recited in independent claim 11. With respect to claim 21, the instant claimed invention is directed to the above processing chamber further comprising: an inner wall connected to an inner edge of the base and extending upwards against the substrate support; an outer wall connected to an outer edge of the base and extending upwards against the wall of the chamber body; a center member having the passage disposed within; a flange circumscribing the center member; and, a cylindrical wall projecting from the center member inside of the flange. Additionally, and with respect to claim 26, the instant claimed invention is directed to an apparatus for lining a semiconductor processing chamber comprising: a lid having an inlet; a liner disposed proximate the lid, the liner having: a first portion having a base substantially covering a bottom of a chamber body and an outer wall disposed proximate a wall of the chamber body; a second portion disposed proximate a lid of the chamber body and having a second portion wall extending downward along the wall of the chamber body to the outer wall of the first portion of the liner: and a plurality of apertures formed in the second portion of the liner: a plenum at least partially defined between the lid and the second portion of the liner: and a nozzle disposed in at least one of apertures for flowing fluid from the plenum through the second portion of the liner. Furthermore, and with respect to claim 38, the instant claimed invention is directed to an apparatus for lining a process volume defined by sidewalls of a semiconductor processing chamber comprising: a liner adapted to be removably disposed in the process volume, the liner comprising: an outer cylindrical wall configured to line the sidewalls of the chamber; an

inner cylindrical wall configured to line a substrate support disposed in the process volume of the chamber; a bottom coupled between the outer cylindrical wall and the inner cylindrical wall; and a passage at least partially formed in the liner and isolated from the process volume, the passage being adapted to flow a heat transfer medium therethrough. Also, and with respect to claim 47, the instant claimed invention is directed to a semiconductor processing chamber comprising: a chamber body having a wall, a bottom and a lid assembly defining a chamber volume; a substrate support disposed within the chamber volume; and, a chamber liner having at least a first portion having a base substantially covering the bottom of the chamber body and an outer wall disposed proximate the wall of the chamber body, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner and adapted to circulate a heat transfer medium therethrough. Additionally, and with respect to claim 49, the instant claimed invention is directed to the processing chamber recited above with respect to claim 47, and wherein the cover of the second portion of the chamber liner further comprises: a plurality of apertures formed therethrough.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 11-24, 26-28, 37-38, 40, 42, and 47-58 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

US 6,171,438	MASUDA ET AL.	1-2001
US 5,824,158	TAKEUCHI ET AL.	10-1998
US 5,565,058	BANHOLZER ET AL.	10-1996
WO 99/48130	PU ET AL.	09-1999
DE 31 10489	REIMOLD ET AL.	10-1982
EP 0 892 422	COLLINS ET AL.	1-1999
EP 0 814 495	SHAN ET AL.	12-1997
WO 97/08734	COLLINS ET AL.	03-1997
EP 0 855 735	ZHAO ET AL.	07-1998

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 53 and 58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification, as originally filed, fails to disclose a semiconductor processing chamber as claimed, wherein a passage is disposed between the liner and the chamber wall, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11-17, 20, 38, 40, 47-48, 51, 53 and 55 are rejected under 35 USC 103(a) as being unpatentable over Pu et al., WO 99/48130 in view of Masuda et al., U.S. Patent 6,171,438.

Pu et al. shows the invention substantially as claimed including a processing chamber comprising: a wall 12, a bottom wall 14, and a lid assembly 10 defining a chamber volume; a substrate support disposed within the chamber volume; and a removable chamber liner 26,27 disposed in the chamber volume and proximate the lid assembly, having a base substantially covering the bottom of the chamber body, and also circumscribing the substrate support; and wherein the outer wall further comprises a pumping port (see fig. 1 and page 4-line 14 to page 5-line 25). Note that the chamber liner 26,27 of the apparatus of Pu et al. comprises an outer wall 26 configured to line the sidewalls of the chamber, an inner wall 27 configured to line a substrate support disposed in the process volume of the chamber, and a bottom coupled between the outer wall and the inner wall.

Pu et al. fails to expressly disclose a passage formed in the chamber liner, the passage fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a fluid through the passage. Masuda et al. discloses an apparatus

comprising a removable liner disposed within a chamber volume and having a passage formed therein to circulate a fluid through the passage in order to control the temperature of the inner wall of the reactor (see fig. 1 and col. 7-lines 23-43). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chamber liner of the apparatus of Pu et al. so as to further comprise a passage formed therein to circulate a fluid as taught by Masuda et al. because this: a) will allow for temperature control of the inner walls of the chamber, b) will reduce contamination by forming a polymerized film on the liner walls (see abstract), c) the inner wall surfaces of the reactor will not be etched and consumed by plasma, and d) the running cost of the reactor is decreased (see col. 5, lines 24-31).

With respect to claim 13, official notice was taken in the office action mailed 10/11/01 and was not seasonably challenged and therefore, as noted in the office action mailed 10/23/02, these limitations are taken to be admitted prior art (see MPEP 2144.03). Furthermore, in order to mount a proper challenge to the examiner's taking of official notice, a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice (see In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971)).

With respect to claim 53, note that Masuda et al. shows a passage 104 disposed between the liner and the chamber wall, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer

medium therethrough. Additionally, with respect to claim 55, note that the chamber liner further comprises an inner wall extending from the base inward of the outerwall.

Claim 18 is rejected under 35 USC 103(a) as being unpatentable over Pu et al., WO 99/48130 in view of Masuda et al., U.S. Patent 6,171,438, as applied to claims 11-17, 20, 38, 40, 47-48, 51, 53, 55 above, and further in view of Reimold et al., DE 31 10489 A1.

Pu et al. and Masuda et al. are applied as above but do not expressly disclose the use of bosses. Reimold discloses the use of bosses for providing connection for the supply or the removal of a heat exchanging medium (see equivalent abstract). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use bosses in the apparatus of Pu et al. modified by Masuda et al. in order to provide connection for the supply and removal of the heat exchanging medium.

Claims 19, 54, and 56-58 are rejected under 35 USC 103(a) as being unpatentable over Pu et al., WO 99/48130 in view of Masuda et al., U.S. Patent 6,171,438 as applied to claims 11-17, 20, 38, 40, 47-48, 51, 53 and 55 above, and further in view of Collins et al., EP 0892422 A2.

Pu et al. and Masuda et al. are applied as above but do not expressly disclose that the inner wall of the chamber liner further comprises a magnet disposed therein. Collins et al. discloses an apparatus in which the inner wall of a chamber liner 2020

comprises a magnet 82 disposed therein in order to confine the plasma (see, for example, Fig. 27 and its description). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Pu et al. modified by Masuda et al. as to further comprise a magnet disposed in the inner wall of the chamber liner in order to protect the pumping annulus by confining the plasma and therefore, enhance the apparatus.

Claims 21-24, and 49-50 are rejected under 35 USC 103(a) as being unpatentable over Pu et al., WO 99/48130 in view of Masuda et al., U.S. Patent 6,171,438 as applied to claims 11-17, 20, 38, 40, 47-48, 51, 53, and 55 above, and further in view of Shan et al., EP 0 814 495 A2.

Pu et al. and Masuda et al. are applied as above but do not expressly disclose the claimed structural limitations. Shan et al. discloses an apparatus having a center member being circumscribed by a flange and from which a cylindrical wall 10 projects, wherein the lid is disposed so as to define a plenum with the wall from which a fluid is coupled to the processing volume through plurality of nozzles (see fig. 1 and page 3-line 20 to page 4-line 45, and page 9, lines 7-46). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Pu et al. modified by Masuda et al. as to comprise the center member/lid/gas supply structure taught by Shan et al. in order to optimize the apparatus since such arrangement will provide for a more uniform distribution of the gas(es) into the chamber and towards the substrate.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pu et al., WO 99/48130 in view of Masuda et al., U.S. Patent 6,171,438 as applied to claims 11-17, 20, 38, 40, 47-48, 51, 53, and 55 above, and further in view of Collins et al. WO 97/08734

Shan et al. and Masuda et al. do not expressly disclose that the passage is formed at least partially in the bottom. Collins et al. discloses an apparatus having a liner 2150 disposed adjacent the bottom of the chamber and thermally coupled to a cold sink 2155 (see fig. 48A and page 65-line 34 to page 66-line 18). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Shan et al. modified by Masuda et al. as to further comprise the cold sink as taught by Collins et al. in order to optimize the apparatus by maintaining a temperature well-below the polymer condensation temperature, therefore avoiding the risk of contamination.

Claims 11-17, 20-24, 38, 40, 47-51, 53, 55 are rejected under 35 USC 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Masuda et al., U.S. Patent 6,171,438.

Shan et al. shows the invention substantially as claimed including a processing chamber comprising: a wall 20, a bottom wall 20, and a lid assembly 37 defining a chamber volume; a substrate support 30 disposed within the chamber volume; and a removable chamber liner disposed in the chamber volume and proximate the lid assembly, having a base substantially covering the bottom of the chamber body, and

also circumscribing the substrate support 30; and wherein the outer wall further comprises a pumping port (see fig. 1 and page 3, line 24 to page 4, line 45). Note that the chamber liner of the apparatus of Shan et al. comprises an outer wall configured to line the sidewalls of the chamber, an inner wall configured to line a substrate support disposed in the process volume of the chamber, and a bottom coupled between the outer wall and the inner wall.

Shan et al. does not expressly disclose a passage formed in the chamber liner, the passage fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a fluid through the passage. Masuda et al. discloses an apparatus comprising a removable liner disposed within a chamber volume and having a passage formed therein to circulate a fluid through the passage in order to control the temperature of the inner wall of the reactor (see fig. 1 and col. 7-lines 23-43). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chamber liner of the apparatus of Shan et al. so as to further comprise a passage formed therein to circulate a fluid as taught by Masuda et al. because such structure is known to be a suitable alternative for controlling the temperature of the side wall, to reduce contamination by forming a polymerized film on the liner walls, the inner wall surfaces of the reactor will not be etched and consumed by plasma, and the running cost of the reactor is decreased (see col. 5, lines 24-31).

With respect to claim 13, official notice was taken in the office action mailed 10-11-01 and was not seasonably challenged and therefore, as noted in the office action mailed 10-23-02, these limitations are taken to be admitted prior art (see MPEP

2144.03). Furthermore, in order to mount a proper challenge to the examiner's taking of official notice, a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice (see In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971)).

With respect to claims 21-24, note that Shan et al. discloses an apparatus having a center member being circumscribed by a flange and from which a cylindrical wall 10 projects, wherein the lid is disposed so as to define a plenum with the wall from which a fluid is coupled to the processing volume through plurality of nozzles (see fig. 1 and page 3-line 20 to page 4-line 45, and page 9, lines 7-46).

With respect to claim 53, note that Masuda et al. shows a passage 104 disposed between the liner and the chamber wall, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough. Additionally, with respect to claim 55, note that the chamber liner further comprises an inner wall extending from the base inward of the outerwall.

Claim 18 is rejected under 35 USC 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Masuda et al., U.S. Patent 6,171,438, as applied to claims 11-17, 20-24, 38, 40, 47-51, 53, 55 above, and further in view of Reimold et al., DE 31 10489 A1.

Shan et al. and Masuda et al. are applied as above but do not expressly disclose the use of bosses. Reimold discloses the use of bosses for providing connection for the

supply or the removal of a heat exchanging medium (see equivalent abstract). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use bosses in the apparatus of Shan et al. modified by Masuda et al. in order to provide connection for the supply and removal of the heat exchanging medium.

Claims 19, 54, and 56-58 are rejected under 35 USC 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Masuda et al., U.S. Patent 6,171,438, as applied to claims 11-17, 20-24, 38, 40, 47-51, 53, 55 above, and further in view of Collins et al., EP 0892422 A2.

Shan et al. and Masuda et al. are applied as above but do not expressly disclose that the inner wall of the chamber liner further comprises a magnet disposed therein. Collins et al. discloses an apparatus in which the inner wall of a chamber liner 2020 comprises a magnet 82 disposed therein in order to confine the plasma (see, for example, Fig. 27 and its description). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Shan et al. modified by Masuda et al. as to further comprise a magnet disposed in the inner wall of the chamber liner in order to protect the pumping annulus by confining the plasma and therefore, enhance the apparatus.

Claims 26 and 28 are rejected under 35 USC 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Zhao et al., EP 0 855 735 A2.

Shan et al. is applied as above and further discloses a lid 24, a liner 10/12 having a first portion having a base substantially covering a bottom of a chamber body and an outer wall disposed proximate a wall of the chamber body and a second portion disposed proximate a lid of the chamber body and having a second portion wall extending downward along the wall of the chamber body to the outer wall of the first portion of the liner, wherein a plurality of apertures are formed in the second portion of the liner, a plenum at least partially defined between the lid and the second portion of the liner (see fig. 1). Shan et al. does not expressly disclose that a nozzle is disposed in at least one of the apertures. Zhao et al. discloses an apparatus having a showerhead 40 that includes nozzles 42 (see col. 14, lines 43-51. Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Shan et al. so as to use a showerhead comprising nozzles since such means are known in the art to effectively and efficiently introduce processing gases into the processing chamber.

Claim 27 is rejected under 35 USC 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Zhao et al., EP 0 855 735 A2 as applied to claims 26 and 28 above, and further in view of Takeuchi et al., U.S. Patent 5,824,158.

Shan et al., and Zhao et al. are applied as above but fail to expressly disclose that the nozzles are comprised of any of the claimed materials. Takeuchi et al. discloses a processing apparatus in which a nozzle made of quartz is used as to prevent the inclusion of impurities in the process gas (see col. 11-lines 53-56). In view

of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Shan et al. modified by Zhao et al. so as to include nozzles made of quartz because this will prevent the incursion of impurities into the process gas.

Claim 37 is rejected under 35 USC 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Zhao et al., EP 0 855 735 A2 as applied to claims 26 and 28 above, and further in view of Banholzer et al., U.S. Patent 5,565,058.

Shan et al., and Zhao et al. are applied as above but do not expressly disclose that the liner comprises a textured surface. Banholzer et al. discloses a vacuum chamber comprising a liner that is treated to roughen its surface to create a textured surface for increasing adhesion of materials deposited thereon during substrate processing. Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Shan et al. modified by Zhao et al. as to texture the interior surface of the liner in order to increase adhesion of materials deposited thereon during substrate processing.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Masuda et al., U.S. Patent 6,171,438 as applied to claims 11-17, 20-24, 38, 40, 47-51, 53, 55 above, and further in view of Collins et al. WO 97/08734

Shan et al. and Masuda et al. do not expressly disclose that the passage is formed at least partially in the bottom. Collins et al. discloses an apparatus having a liner 2150 disposed adjacent the bottom of the chamber and thermally couple to a cold sink 2155 (see fig. 48A and page 65-line 34 to page 66-line 18). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Shan et al. modified by Masuda et al. as to further comprise the cold sink as taught by Collins et al. in order to optimize the apparatus by maintaining a temperature well-below the polymer condensation temperature, therefore avoiding the risk of contamination.

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shan et al., EP 0 814 495 A2 in view of Masuda et al., U.S. Patent 6,171,438. as applied to claims 11-17, 20-24, 38, 40, 47-51, 55 above, and further in view of Zhao et al., EP 0 855 735 A2.

Shan et al. and Masuda et al. are applied as above and Shan et al. further discloses a wall 10 having an upper end closed by a top member 24/44, the wall adapted to line a portion of the chamber volume, a plurality of apertures in the top member, and a passage formed in the top member (see fig. 1 and its description). Shan et al. and Masuda et al. do not expressly disclose that a nozzle is disposed in at least one of the apertures. Zhao et al. discloses an apparatus having a showerhead 40 that includes nozzles 42 (see col. 14, lines 43-51). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the apparatus of Shan et al. modified by Masuda et al. so as to use a showerhead comprising nozzles since such means are known in the art to effectively and efficiently introduce processing gases into the processing chamber.

(11) Response to Argument

Appellant's arguments filed 09/24/04 have been fully considered but they are not persuasive.

With respect to the rejection of claims 53 and 58 under 35 USC 112, first paragraph, the examiner respectfully disagrees with the contention that ample written description is provided in the specification as originally filed. The portions of the specification relied upon by appellant (Fig. 3, page 4-lines 18-28, and page 7-lines 24-36) fail to provide support for the limitation of "wherein a passage is disposed between the liner and the chamber wall, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough". Appellant seemed to admit this fact since on page 9 of the response to the final rejection it was mentioned that claim 53 was amended to overcome this rejection (the amendment was not entered because it created a new issue). For these reasons, the rejection under 35 USC 112, first paragraph, is respectfully maintained.

Concerning the rejection under 35 USC 103 of Pu in view of Masuda, appellant argues that there is no motivation to combine the references. However, the examiner respectfully disagrees since the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the

claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine the references is: a) this will allow for temperature control of the inner walls of the chamber, b) this will reduce contamination by forming a polymerized film on the liner walls (see abstract), c) the inner wall surfaces of the reactor will not be etched and consumed by plasma, and d) the running cost of the reactor is decreased (see above rejection).

Additionally, appellant argues that Pu et al. incorporates by reference the Shan reference and therefore it teaches away from making the shield thinner. However, it the examiner kindly points out that Shan does not teach away from making the shield thinner but rather teaches that the thickness of the shield can be adjusted to adjust the RF bias (see page 5, lines 7-14). The apparatus of Pu et al. modified by Masuda et al. could still have the shield thickness adjusted to attain the desired DC bias.

Furthermore, in response to appellant's argument that Pu et al. and Masuda et al. are not physically combinable, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Moreover, in response to appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Concerning appellant's contention that Pu et al. modified by Masuda et al. fail to show a chamber liner having a base that "substantially covers the bottom of the chamber body, the base having a substantially annular passage formed therein", the examiner respectfully submits that such a limitation is shown by the combination of the Pu et al. and Masuda et al. references. Note that Pu et al. discloses a chamber liner that covers the bottom of the chamber body not covered by the substrate support and the exhaust port (see fig. 1), and Masuda et al. teaches the annular passage formed therein, as described in the above rejection. Furthermore, due to the material being circulated in Masuda et al. (see fig. 1 and col. 7-lines 23-43), both an inlet and an outlet must be present.

With respect to claim 38, clearly Pu et al. teaches a chamber liner having a bottom that is coupled between the outer cylindrical wall and the inner cylindrical wall, where the outer cylindrical wall covers the sidewalls of the chamber and the inner cylindrical wall covers the substrate support (see clearly in fig. 1). With respect to the

outer and inner cylindrical walls and the bottom being a single component, it is noted that the features upon which appellant relies (i.e., the outer and inner cylindrical walls and the bottom being a single component) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding claim 47, the examiner submits that the features upon which appellant relies (i.e., the outer wall and the base being a single liner component) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore, with respect to claims 51 and 53, the examiner believes that the combination of Pu et al. and Masuda et al. provide ample motivation to render the limitations of claims 51 and 53 obvious to one of ordinary skill in the art, since the single liner referenced is not recited in the claims as described above. In response to applicant's argument that Pu et al. and Masuda et al. are not physically combinable, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

With respect to the Reimold reference, note that Reimold is not used to reject the features of the independent claim 11 but rather for dependent claim 18 and therefore appellant's arguments with respect to this reference are improper. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Concerning the combination of Collins with Pu and Masuda in the rejection of claims 19, 54, and 56-58 under 35 USC 103, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Pu modified by Masuda as to further comprise a magnet disposed in the inner wall of the chamber liner in order to protect the pumping annulus by confining the plasma and therefore enhance the apparatus, for example. Regarding appellant's contention that the combination of

references do not contain a port, see exhaust port 50 in fig.1 of Pu. Regarding the fact that Collins does not teach that the magnets are removable, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). As pointed out by appellant, Pu and Masuda disclose removable liners.

In response to appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Concerning rejections under 35 USC 103 using the Pu, Masuda, and Shan or Collins II references, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

With respect to rejections involving Shan as a primary reference, note that the arguments involving the Shan and Pu references are similar and that arguments applied to rejections involving Pu apply equally to rejections involving Shan.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to appellant's argument that there is no suggestion to combine the Shan and Zhao references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Zhao et al., as broadly interpreted, clearly provides motivation to place nozzles on the aperture structure 44 in fig. 1 of Shan et al..

Additionally, note that Shan teaches a chamber liner having a first portion that has a base "substantially covering a bottom of the chamber body" and a second portion "disposed proximate a lid of the chamber body" and a wall that extends downward toward the first portion outer wall (see fig. 1).

Moreover, the examiner submits that the features upon which applicant relies (i.e., the chamber sidewall and chamber bottom being a single liner component) are not recited in the rejected claim(s). Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding the rejection under 35 USC 103 of Shan in view of Zhao and Takeuchi, for the reasons above, the rejection of claim 27 is also proper particularly since appellant fails to argue specifically the Takeuchi reference.

With respect to the Banholzer reference, the examiner respectfully contends that the motivation to combine Banholzer with the Shan et al. and Zhao et al. references is proper for the reasons of record and the rejection is respectfully maintained.

Concerning the fact that claim 52 is improperly rejected by Shan in view of Masuda and further in view of Zhao because the cylindrical wall and passage are not shown, the examiner respectfully disagrees since it has previously been argued by the examiner that such limitations are shown by the combination of Shan and Masuda.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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